CLAIMS

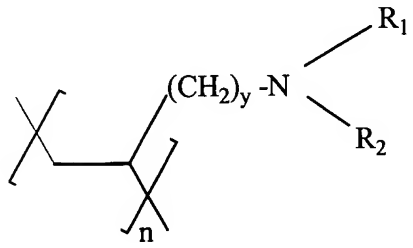
What is claimed is:

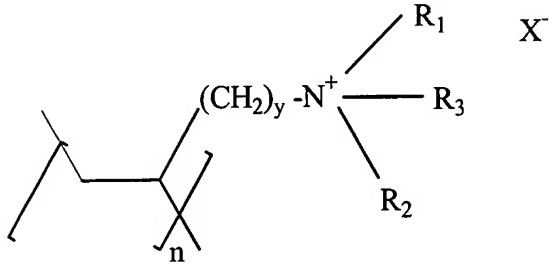
1. A method for promoting bone formation in a mammal in need thereof by administering to the mammal a therapeutically effective amount of at least one amine polymer with the proviso that said mammal is not suffering from hyperphosphatemia.

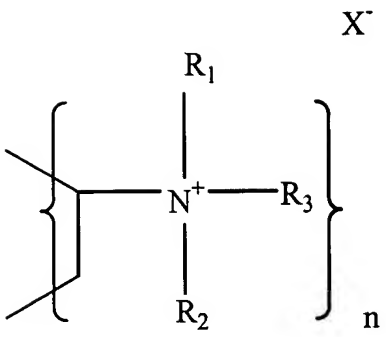
2. A method for promoting bone formation in a mammal in need thereof by administering to the mammal a therapeutically effective amount of at least one amine polymer with the proviso that said mammal is not suffering from hyperparathyroidism, hyperphosphatemia or osteitis fibrosa.

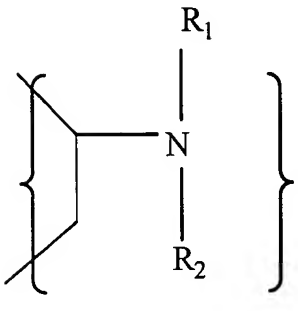
3. The method of Claim 2 wherein the polymer is an aliphatic amine polymer.

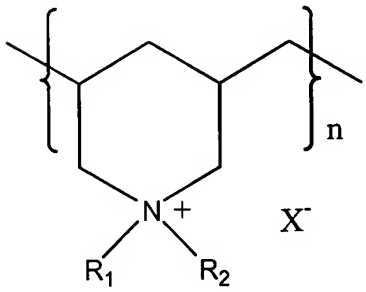
4. The method of Claim 2 wherein the polymer is characterized by a repeat unit having a formula selected from the group consisting of:

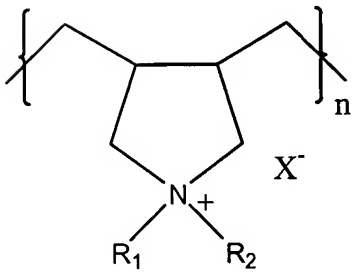


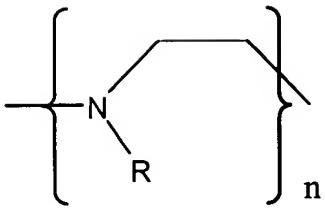




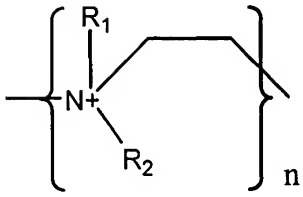








X^-



or a salt or a copolymer thereof, where n is a positive integer and y is an integer of one or more, each R, R_1, R_2 and R_3, independently, is H or a substituted or unsubstituted alkyl group, and X^- is an exchangeable negatively charged counterion.

5. The method of Claim 4 wherein said polymer is cross-linked by means of a multifunctional cross-linking agent.

6. The method of Claim 5 wherein the multifunctional cross-linking agent is present in an amount from about 0.5-25% by weight, based upon the combined weight of monomer and cross-linking agent.

7. The method of Claim 6 wherein the multifunctional cross-linking agent is present in an amount from about 2.5-20% by weight, based upon the combined weight of monomer and cross-linking agent.

8. The method of Claim 5 wherein said cross-linking agent comprises epichlorohydrin.

9. The method of Claim 5 wherein the polymer is a homopolymer.

10. The method of Claim 9 wherein the polymer is a polyallylamine.

11. The method of Claim 9 wherein the polymer is a polydiallylamine.

12. The method of Claim 9 wherein the polymer is a polyvinylamine.

13. The method of Claim 4 wherein at least one of R, R_1, R_2, and R_3 in each formula is hydrogen.

14. The method of Claim 2 wherein the polymer is administered with one or more meals.

15. A method for prophylactic treatment of a mammal that has a risk factor for bone loss by administering to the mammal a therapeutically effective amount of at least one amine polymer.

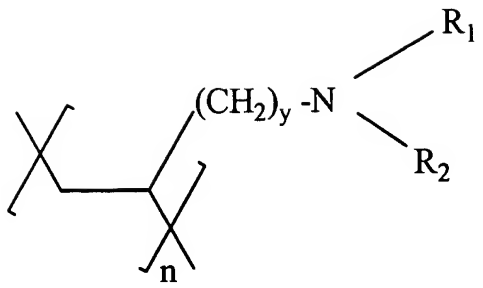
16. The method according to Claim 15 wherein the risk factor is taking a drug with a side effect of bone loss.

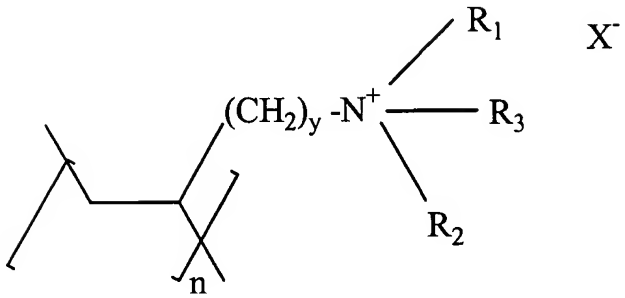
17. The method according to Claim 16 wherein the drug is a cortisone-like drug.

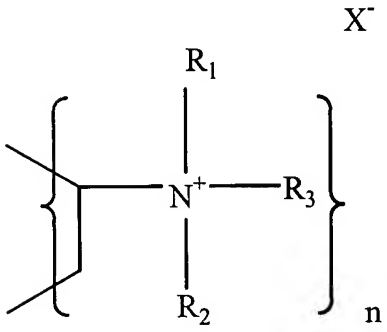
18. The method according to Claim 17 wherein the risk factor is postmenopause.

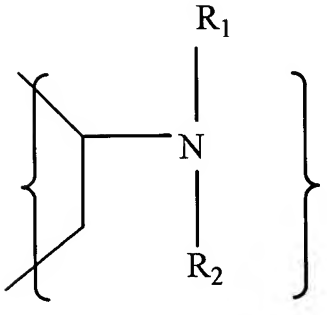
19. The method of Claim 15 wherein the polymer is an aliphatic amine polymer.

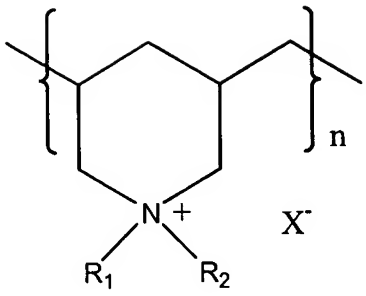
20. The method of Claim 15 wherein the polymer is characterized by a repeat unit having a formula selected from the group consisting of:

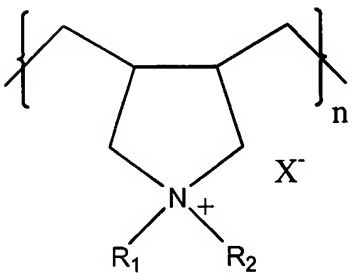

R1
(CH2)y -N
R2
n

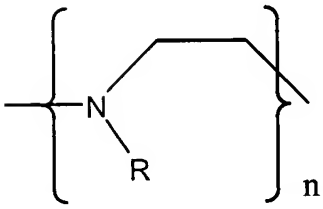

R1
X-
(CH2)y -N+
R3
R2
n

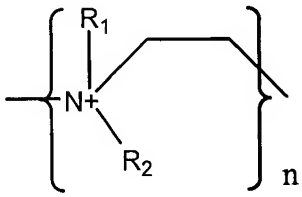

X-
R1
N+
R3
R2
n


R1
N
R2
n









or a salt or copolymer thereof, where n is a positive integer and y is an integer of one or more, each R, R_1, R_2 and R_3, independently, is H or a substituted or unsubstituted alkyl group, and X^- is an exchangeable negatively-charged counterion.

21. The method of Claim 20 wherein said polymer is cross-linked by means of a multifunctional cross-linking agent.

22. The method of Claim 21 wherein the multifunctional cross-linking agent is present in an amount from about 0.5-25% by weight, based upon the combined weight of monomer and cross-linking agent.

23. The method of Claim 22 wherein the multifunctional cross-linking agent is present in an amount from about 2.5-20% by weight, based upon the combined weight of monomer and cross-linking agent.

24. The method of Claim 21 wherein said cross-linking agent comprises epichlorohydrin.

25. The method of Claim 21 wherein the polymer is a homopolymer.

26. The method of Claim 25 wherein the polymer is a polyallylamine.

27. The method of Claim 25 wherein the polymer is a polydiallylamine.

28. The method of Claim 25 wherein the polymer is a polyvinylamine.

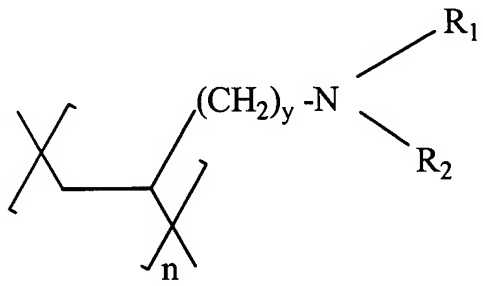
29. The method of Claim 20 wherein at least one of R, R_1, R_2, and R_3 in each formula is hydrogen.

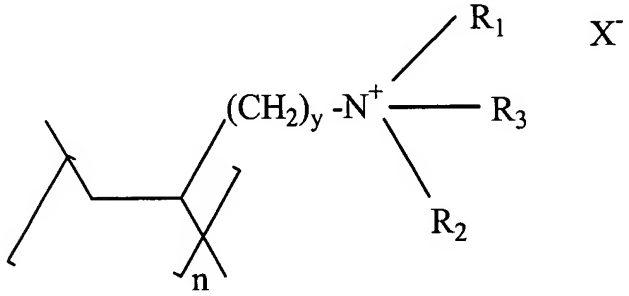
30. The method of Claim 15 wherein the polymer is administered with one or more meals.

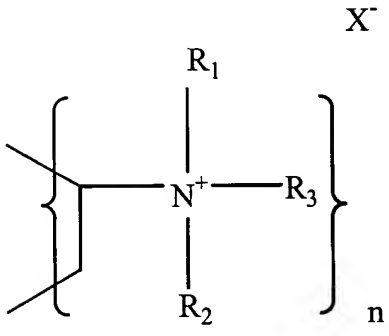
31. A method for treating a mammal suffering from osteoporosis by administering to the mammal a therapeutically effective amount of at least one amine polymer.

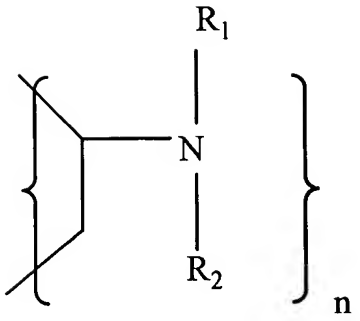
32. The method of Claim 31 wherein the polymer is an aliphatic amine polymer.

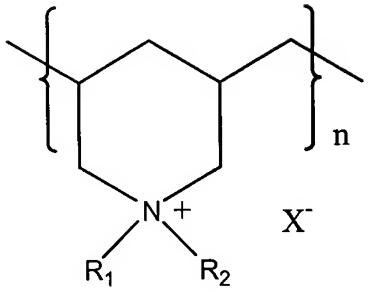
33. The method of Claim 31 wherein the polymer is characterized by a repeat unit having a formula selected from the group consisting of:

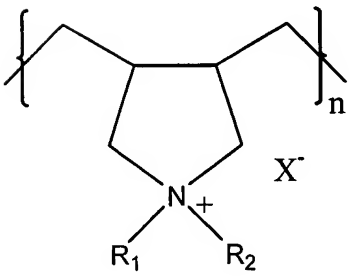


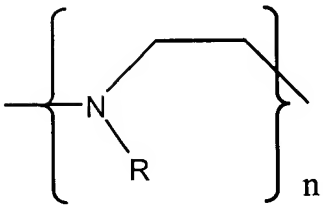


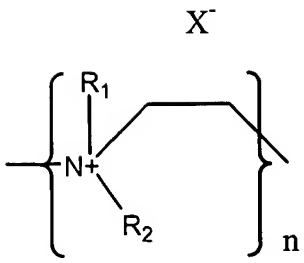



R1
N
R2
n


n
N+
X-
R1
R2


n
X-
N+
R1
R2


N
R
n



or a salt or copolymer thereof, where n is a positive integer and y is an integer of one or more, each R, R_1, R_2 and R_3, independently, is H or a substituted or unsubstituted alkyl group, and X^- is an exchangeable negatively-charged counterion.

34. The method of Claim 33 wherein said polymer is cross-linked by means of a multifunctional cross-linking agent.

35. The method of Claim 34 wherein the multifunctional cross-linking agent is present in an amount from about 0.5-25% by weight, based upon the combined weight of monomer and cross-linking agent.

36. The method of Claim 35 wherein the multifunctional cross-linking agent is present in an amount from about 2.5-20% by weight, based upon the combined weight of monomer and cross-linking agent.

37. The method of Claim 34 wherein said cross-linking agent comprises epichlorohydrin.

38. The method of Claim 34 wherein the polymer is a homopolymer.

39. The method of Claim 38 wherein the polymer is a polyallylamine.

40. The method of Claim 38 wherein the polymer is a polydiallylamine.

41. The method of Claim 38 wherein the polymer is a polyvinylamine.

42. The method of Claim 33 wherein at least one of R, R_1, R_2, and R_3 in each formula is hydrogen.